

What is claimed is:

1. A simulation apparatus for simulating a receiving
characteristic of an object that receives a radio wave
5 transmitted from a radio wave generation source,
comprising:

a first current calculation device calculating
current values of the generation source using
simultaneous equations of the generation source when
10 the generation source is divided into a plurality of
elements, the simultaneous equations of the generation
source having currents that flow through respective
elements as unknowns;

a current storage device storing the current
15 values of the generation source;

a second current calculation device calculating
current values of the object using simultaneous
equations of the object when the object is divided into
a plurality of elements and a positional relationship
20 between the generation source and object changes, the
simultaneous equations of the object having currents
that flow through respective elements as unknowns and
the current values stored in the current storage device
as constants; and

25 an output device calculating the receiving

characteristic of the object based on the current values of the object and outputting the receiving characteristic of the object.

5 2. The simulation apparatus according to claim 1,
wherein said second current calculation device
includes a device calculating mutual impedance between
elements of the object, a device calculating mutual
impedance between an element of the generation source
10 and an element of the object and a matrix storage device
storing matrix data of mutual impedance between
elements of the object, calculates mutual impedance
between an element of the generation source and an
element of the object corresponding to a new position
15 when a position of the generation source changes,
generates simultaneous equations of the object
corresponding to the new position using the matrix data
stored in the matrix storage device as a coefficient
matrix and calculates new current values.

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3. The simulation apparatus according to claim 2,
wherein said second current calculation device further
includes a factorization device factorizing the
coefficient matrix by a prescribed factorization
25 method and said matrix storage device stores matrix

data of a factorized coefficient matrix.

4. The simulation apparatus according to claim 1,
further comprising

5 a judging device judging whether a calculation
method in which the current values of the generation
source are regarded as constants can be used, wherein
said second current calculation device calculates the
current values of the object using the simultaneous
10 equations of the object if the calculation method can
be used.

5. A simulation apparatus for simulating a
directivity characteristic of an object that receives
15 a radio wave transmitted from a transmitting antenna,
comprising:

 a first current calculation device calculating
current values of the transmitting antenna using
simultaneous equations of the transmitting antenna
20 when the transmitting antenna is divided into a
plurality of elements, the simultaneous equations of
the transmitting antenna having currents that flow
through respective elements as unknowns;

 a current storage device storing the current
25 values of the transmitting antenna;

a matrix storage device storing matrix data of mutual impedance between elements of the object when the object is divided into a plurality of elements;

a device calculating mutual impedance between
 5 an element of the transmitting antenna and an element of the object for each angle of the transmitting antenna against the object;

a second current calculation device generating simultaneous equations of the object for each angle
 10 of the transmitting antenna using currents that flow through respective elements of the object as unknowns, matrix data stored in the matrix storage device as a coefficient matrix and both the current values stored in the current storage device and the mutual impedance
 15 between the element of the transmitting antenna and the element of the object as constants, and calculating current values of the object; and

an output device calculating the directivity characteristic of the object based on the current values
 20 of the object and outputting the directivity characteristic of the object.

6. A simulation apparatus for simulating a receiving characteristic of an object that receives a radio wave
 25 transmitted from a radio wave generation source,

comprising:

an impedance storage device storing both data of mutual impedance between elements of the generation source when the generation source is divided into a plurality of elements and data of mutual impedance between elements of the object when the object is divided into a plurality of elements as data independent from a position of the generation source;

a device calculating mutual impedance between an element of the generation source and an element of the object corresponding to a new position when the position of the generation source changes;

a current calculation device calculating current values using simultaneous equations having currents that flow through respective elements of both the generation source and object as unknowns and having a matrix consisting of the data stored in the impedance storage device and the mutual impedance between the element of the generation source and the element of the object as a coefficient matrix; and

an output device calculating the receiving characteristic of the object based on the current values and outputting the receiving characteristic of the object.

7. A computer-readable storage medium on which is recorded a program for enabling a computer to simulate a receiving characteristic of an object that receives a radio wave transmitted from a radio wave generation source, said process comprising:

calculating current values of the generation source using simultaneous equations of the generation source when the generation source is divided into a plurality of elements, the simultaneous equations of the generation source having currents that flow through respective elements as unknowns;

storing the current values of the generation source;

calculating current values of the object using simultaneous equations of the object when the object is divided into a plurality of elements and a positional relationship between the generation source and object changes, the simultaneous equations of the object having currents that flow through respective elements as unknowns and the stored current values as constants;

calculating the receiving characteristic of the object based on the current values of the object; and

outputting the receiving characteristic of the object.

8. A propagation signal for propagating to a computer a program for enabling the computer to simulate a receiving characteristic of an object that receives a radio wave transmitted from a radio wave generation source, said process comprising:

calculating current values of the generation source using simultaneous equations of the generation source when the generation source is divided into a plurality of elements, the simultaneous equations of the generation source having currents that flow through respective elements as unknowns;

storing the current values of the generation source;

calculating current values of the object using simultaneous equations of the object when the object is divided into a plurality of elements and a positional relationship between the generation source and object changes, the simultaneous equations of the object having currents that flow through respective elements as unknowns and the stored current values as constants;

calculating the receiving characteristic of the object based on the current values of the object; and

outputting the receiving characteristic of the object.

object.

10. A simulation apparatus for simulating a receiving
characteristic of an object that receives a radio wave
5 transmitted from a radio wave generation source,
comprising:

first current calculation means for calculating
current values of the generation source using
simultaneous equations of the generation source when
10 the generation source is divided into a plurality of
elements, the simultaneous equations of the generation
source having currents that flow through respective
elements as unknowns;

current storage means for storing the current
15 values of the generation source;

second current calculation means for calculating
current values of the object using simultaneous
equations of the object when the object is divided into
a plurality of elements and a positional relationship
20 between the generation source and object changes, the
simultaneous equations of the object having currents
that flow through respective elements as unknowns and
the current values stored in the current storage means
as constants; and

25 output means for calculating the receiving

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